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BORON

Boron, compared to the precious and common nonferrous metals, is an abundant element estimated to comprise about 0.001 percent of the earth's crust. Usable concentrations of boron minerals are comparatively rare, and in recent years 95 percent of the world's supply has come from southeastern California. In 1954, California produced 778,420 tons of boron minerals with a B_2O_3 content of 225,888 tons and valued at $26,714,440. The California output has more than doubled in ten years. Most of this tonnage has been consumed in the form of borax, which long has been a useful industrial material. Recently elemental boron and the less familiar boron chemicals have been the subject of intense research. Boron-bearing gasolines for high compression engines are on the market, and boron compounds are being studied for use as rocket fuels and many other purposes. The consumption of boron materials for such purposes is still small compared to that of borax, but the potential demand is great.

Boron minerals

Of the many minerals containing boron, by far the most important commercially are the borates. The sodium borates include borax ($Na_2B_4O_7 \cdot 10H_2O$), kernite ($Na_2B_4O_7 \cdot 4H_2O$),and tincalconite ($Na_2B_4O_7 \cdot 5H_2O$).Calcium borates include colemanite ($Ca_2B_6O_{11} \cdot 5H_2O$), inyoite ($Ca_2B_6O_{11} \cdot 13H_2O$), meyerhofferite ($Ca_2B_6O_{11} \cdot 7H_2O$), and priceite ($Ca_5B_{12}O_{23} \cdot 9H_2O$). Ulexite ($NaCaB_5O_9 \cdot 8H_2O$) and probertite ($NaCaB_5O_9 \cdot 5H_2O$) are sodium-calcium borates. Additional boron minerals of commercial interest include sassolite or natural boric acid (H_3BO_3) and boracite($Mg_6Cl_2B_{14}O_6$). At present borax and kernite together with borate brines are the most important sources of boron and its compounds; much smaller amounts are obtained from colemanite, priceite, ulexite, boracite, and sassolite. Before the discovery of rich deposits of borax and kernite, deposits of colemanite and ulexite furnished most of the boron compounds used.

Geologic occurrence

Boron is believed to be a constituent of magmas. Not only do igneous rocks contain borosilicate minerals such as tourmaline, but boric acid is present

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PROPOSED WILDLIFE WITHDRAWAL

The U.S. Fish and Wildlife Service has requested the U.S. Bureau of Land Management to withdraw portions of the public domain to provide assistance to the State of California (Department of Fish and Game) for the protection, development, and management of the wildlife resources. The management of the withdrawn lands will continue under the administration of the Bureau of Land Management in accordance with the Coordination Act of 1946. Under this act no mining claims can be filed on locatable minerals (chromite, mercury, gold, etc.); however, removal of those minerals which came under the mineral leasing laws (oil, gas, coal, sand and gravel, salines,etc.) will be permitted by leasing arrangements. Public hearings have been scheduled for those areas where protests have been filed. The schedule of hearings was printed in the September 1957 issue of Mineral Information Service. The withdrawal areas under discussion at these hearings are of interest to the mining industry and are discussed below. These include the New Idria, Panoche, Caliente, and Temblor areas;the McCain Valley area; the Mount Dome area; and the Cinder Cone area.

New Idria area

Since 1858, the New Idria area in southeast San Benito and west Fresno Counties has been one of mineral production, principally of mercury. Commercial quantities of chromite,asbestos, magnesite, bentonite, jadeite, and gem stones have also been produced from this locality.

Geology and mineral deposits. The rocks exposed in the New Idria area consist of a central core of serpentine and sandstone of the (Jurassic?) Franciscan formation surrounded by Upper Cretaceous Panoche shale and sandstone and Tertiary sedimentary rocks. Structurally the rocks form a northwest-trending, eroded,asymmetric anticlinal dome in which the serpentine is believed to have been pushed upward as a plastic plug. The serpentine-Franciscan contacts and the Franciscan-Panoche contacts are marked by steep faults which dip away from the central core except near the New Idria mine. Here on the northeast flank of the dome the upper Panoche shales are crumpled and overturned beneath the New Idria thrust fault which has caused them to be over-rid-

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